



**Cal/EPA**  
California  
Environmental  
Protection  
Agency



Air Resources Board

P.O. Box 2815  
2020 L Street  
Sacramento, CA  
95812-2815

[www.arb.ca.gov](http://www.arb.ca.gov)



Pete Wilson  
Governor

Peter M. Rooney  
Secretary for  
Environmental  
Protection

December 3, 1997

Dear Sir or Madam:

The Adhesives Committee of the California Air Pollution Control Officers Association (Committee) will hold a public workshop to discuss the "Draft Proposed Determination of Reasonably Available Control Technology (RACT) and Best Available Retrofit Control Technology (BARCT) for Adhesives and Sealants" (determination). The determination proposes volatile organic compound limits for adhesives and sealants used in commercial and industrial processes. The determination is being developed by the Committee and the Air Resources Board.

The Committee is holding a second workshop to continue discussion on issues raised at the August 19, 1997 workshop and to provide additional opportunity for comments. The public workshop will be held as follows:

Date: Thursday, January 8, 1998  
Time: 10:00 A.M. - 1:00 P.M.  
Location: Room CC2  
South Coast Air Quality Management District  
21865 E. Copley Drive  
Diamond Bar, California 91765-4182

The building is accessible to persons with disabilities. Persons needing reasonable accommodations may contact the South Coast Air Quality Management District's Public Information Center at (909) 396-2039 for assistance.

Enclosed is a tentative agenda, a summary of revisions to the determination, and a revised proposal.

If you have questions about the workshop or to request a copy of the proposed determination, please contact Mr. Jose Gomez, Air Resources Engineer, at (916) 327-1502 or send e-mail to: [jgomez@arb.ca.gov](mailto:jgomez@arb.ca.gov). You may also obtain a copy of the proposed determination and this notice from the ARB website at <http://www.arb.ca.gov/ractbarc/>.

Sincerely,

Dean C. Simeroth Chief  
Criteria Pollutants Branch  
Stationary Source Division

Enclosures

cc: California Air Pollution Control Officers Association Adhesives Committee  
Members

# **TENTATIVE AGENDA**

## **PUBLIC WORKSHOP**

### **Draft RACT/BARCT Determination for Adhesives and Sealants**

Date: Thursday, January 8, 1998

Time: 10:00 A.M. - 1:00 P.M.

Location: Room CC2  
South Coast Air Quality Management District  
21865 E. Copley Drive  
Diamond Bar, California 91765-4182

1. Introductions
2. Discuss Revised Adhesives RACT/BARCT Determination
3. Industry Comments/Presentations
4. Open Discussion
5. Closing Remarks

## **SUMMARY OF REVISIONS TO THE DRAFT RACT/BARCT DETERMINATION FOR ADHESIVES AND SEALANTS**

On August 19, 1997, the Adhesive Committee of the California Air Pollution Control Officers Association (Committee) held a workshop to discuss the “Draft Proposed Determination of Reasonably Available Control Technology (RACT) and Best Available Retrofit Control Technology (BARCT) for Adhesives and Sealants” (determination).

As a result of written and oral comments provided to the Committee, we have revised the determination (see Attachment 2 of this package). The Committee would appreciate comments on these revisions.

### **Revisions to the Draft Adhesives RACT/BARCT Determination**

Aerosol Adhesives. The Committee modified the definition of aerosol adhesives (Section II.(D)) to be consistent with the California Air Resources Board’s (ARB) Consumer Products regulations. Additionally, we have modified the footnote in Section III.B to clarify that the ARB will conduct a technical assessment by 7/1/2000 on the feasibility of achieving the 25% volatile organic compound (VOC) limit by the 1/1/2002 deadline. The Committee will also expand the discussion in the staff report, as appropriate.

Modified Bituminous Materials. The Committee has added a new category in Section III.A(3) for Modified Bitumen Membrane Primers with a VOC limit set at 500 g/l. A definition for Modified Bitumen Membrane Primer and for Bituminous Materials have also been added in Section (II).X and (II).Y.

Floor Covering Installations. The Committee is expanding the small container exemption in Section III.G(5)-Prohibition of Sales to cover all adhesives, sealants and primers. We will also clarify in the staff report that “stationary source” referred to in IV.B (Exemptions) includes both point sources and area sources.

Aerospace Assembly. The Committee will add language to the staff report to clarify that the adhesive determination does not apply to adhesives covered under other district rules. Section IV.A(6) exempts adhesive applications covered under other district rules.

Cyanoacrylate adhesive. The Committee has added Section IV.A(10) to exempt Cyanoacrylate adhesives from the RACT/BARCT requirements.

Thin Laminating. The Committee modified the definition in Section II.VV for Thin Metal Laminating to read “... 0.25 mils.” The Committee is also deleting the 250 g/l BARCT VOC limit for this category in Section III.A.(1).

Contact Adhesives. Manufacturers have requested that a 540 grams per liter (g/l) VOC limit be established for certain contact adhesives, including adhesives used in bonding of single-ply roof membrane installation/repair; bonding of immersible products; bonding of flexible vinyl to flexible vinyl; or bonding of plastic, rubber, or unprimed metal to plastic, rubber, or unprimed metal. Also, included in the request for the 540 g/l limit are contact adhesives used in laminating certain materials including laminate to melamine covered board, decorative metallic laminates to metal surfaces, and laminates to any surface when using certain post forming equipment. Manufacturers stated that contact adhesives meeting the 200 g/l VOC limit do not perform well in these applications.

After reviewing the available data, the Committee concluded that the 540 g/l VOC limit for nonporous substrates is warranted. Also, the Committee is proposing to modify the contact adhesive limit for porous substrates from 200 g/l to 250 g/l. The Committee has added a 540 g/l for nonporous substrates effective through 12/31/1999 in Section III.(A)(1). Beginning on January 1, 2000, the VOC limit for contact adhesives for nonporous materials will be 250 g/l. The Committee recognizes that the 250 g/l limit is technology forcing, but believes the technology will be available by the year 2000 to meet the proposed limit.

Small Use Exemption: Manufacturers requested a small use exemption of 10 gal/month (120 gal/yr). The determination contains an exemption level of 55 gal/yr. The request for a higher exemption level is based on results of a survey conducted by the Bay Area Air Quality Management District (AQMD) on the use of contact adhesives in the Bay Area AQMD.

Because air quality needs and source inventories vary from district to district, the Committee concluded that this issue would be best addressed by the individual districts. The 55 gal/year exemption level is partly based on established U.S. EPA policy. The Committee believes that districts are best able to justify a departure from the stated exemption level based on their specific source inventories. Therefore, the Committee is not proposing any changes to the exemption level.

Adhesives Formulated to Comply with the Federal Hazardous Substances Act.

Manufacturers requested an exemption for retail products sold in containers of 128 fluid ounces or less formulated to comply with the requirements of the Federal Hazardous Substances Act as codified in 16 CFR Section 1302. They stated that products formulated to comply with these regulations can not meet the specified VOC limits. The manufacturers provided the Committee information on the amount of these products that are sold in California. After reviewing the available information on this issue, the Committee has decided not to include an exemption for these products in the determination. Districts should consider whether such exemption is appropriate in their area when adopting or amending their adhesives rule.

Aerosol Cleaners and Strippers. A manufacturer requested that an exemption be included in the draft determination for use of small amounts of aerosol cleaners/strippers. A similar exemption has been adopted in the South Coast AQMD Rule 1171 and Sacramento Metropolitan AQMD Rule 460. The manufacturer requested an exemption level of 160 fluid ounces per day. After discussing this exemption with the South Coast and Sacramento Metropolitan AQMDs, the Committee concluded that the exemption is not warranted. However, the Committee will consider additional information that may be presented in support of the requested exemption.

Test Methods. A manufacturer requested that the determination include the Bay Area AQMD Test Method 35 and 36 for Aerosol Adhesives. The Committee believes that the test method specified is appropriate. Districts can reference other methods such as Test Method 35 and 36 if they determine them to be equivalent to Test Method 310.

Alternative Compliance Method. Manufacturers suggested that the Committee consider changing the way the VOC content of adhesives and sealants is regulated. Currently, the VOC limits are expressed in a grams of VOC per liter of liquid. They suggested the Committee consider establishing a VOC limit based on a unit of work (grams of VOC per grams of solids applied on a surface). They stated that the current methodology treats all liquids the same and does not account for differences in the solids content of products. Typically, all manufacturers recommend a specified grams of solid per unit of surface area. Thus, it requires less volume of high solids product to the same work than with a lower solids product. Industry representatives are providing additional information to the Committee.

The Committee recognizes that the concept may have potential to improve VOC regulations. The Committee also recognizes that such approach would require a fundamental change in the way VOC regulations are currently structured. Therefore, it would require an extensive evaluation that can not be conducted within the time frame of completing this determination. The Committee will work with industry to further evaluate the technical merits of this approach.

#### Prohibition of Sale Provision

Questions have been raised as to how districts would enforce the prohibition of sale provisions in the determination. Specifically, how a distributor or manufacturer would determine that a customer is allowed to buy noncomplying products. As discussed at the August workshop, the Committee believes that self certification is a mechanism that districts could use to implement this provision. A discussion of self certification will be provided in the staff report. The Committee is seeking input on other strategies that may be more efficient or preferable to distributors and manufacturers.

## **DRAFT PROPOSED RACT/BARCT DETERMINATION FOR ADHESIVES AND SEALANTS**

NOTE: New text is shown in underlined and text to be deleted is shown with ~~strike-out~~.

### **I. APPLICABILITY**

This determination (rule) is applicable to any person who supplies, sells, offers for sale, or uses adhesives, sealants, or adhesive or sealant primers.<sup>1</sup> All provisions in this determination (rule), unless otherwise indicated, shall become effective on (12 months after the adoption date). All provisions are RACT unless otherwise specified as BARCT.

### **II. DEFINITIONS**

For the purpose of this determination (rule), the following definitions apply:

- A. ACRYLONITRILE-BUTADIENE-STYRENE (ABS) WELDING ADHESIVE is any adhesive intended by the manufacturer to weld acrylonitrile-butadiene-styrene (ABS) pipe. ABS pipe is made by reacting monomers of acrylonitrile, butadiene, and styrene and is normally identified with an ABS marking.
- B. ADHESIVE is any substance that is used to bond one surface to another surface by attachment.
- C. ADHESIVE PRIMER is any product intended by the manufacturer to be applied to a substrate, prior to the application of an adhesive, to provide a bonding surface.
- D. AEROSOL ADHESIVE ~~is a mixture of rubber, resins, and liquid and gaseous solvents and propellants packaged in a disposable container for hand-held application.~~ means an adhesive packaged as an aerosol product in which the spray mechanism is permanently housed in a nonrefillable can designed for hand-held application without the need for ancillary hoses or spray equipment.
- E. ARCHITECTURAL SEALANT/PRIMER is any sealant or sealant primer intended by the manufacturer to be applied to stationary structures, including mobile homes, and their appurtenances. Appurtenances to an architectural structure include, but

---

<sup>1</sup> Adoption of the sales prohibition is at the discretion of the District.

are not limited to: hand railings, cabinets, bathroom and kitchen fixtures, fences, rain gutters and downspouts, and windows.

- F. AUTOMOTIVE GLASS ADHESIVE PRIMER is any adhesive primer intended by the manufacturer to be applied to automotive glass prior to installation with an adhesive/sealant. This primer improves adhesion to the pinch weld and blocks ultraviolet light.
- G. CERAMIC TILE INSTALLATION ADHESIVE is any adhesive intended by the manufacturer for the installation of ceramic tiles.
- H. CHLORINATED POLYVINYL CHLORIDE (CPVC) WELDING ADHESIVE is any adhesive intended by the manufacturer for the welding of CPVC plastic pipe. CPVC plastic is a polymer of the monomer that contains 67 percent chlorine and is normally identified with a CPVC marking.
- I. COMPUTER DISKETTE JACKET MANUFACTURING ADHESIVE is any adhesive intended by the manufacturer to glue the fold-over flaps to the body of a vinyl computer diskette jacket.
- J. CONTACT ADHESIVE is any adhesive intended by the manufacturer to adhere to itself instantaneously upon contact. The adhesive is applied to both adherends and allowed to become dry, which develops a bond when the adherends are brought together without sustained pressure. For the purpose of this determination (rule), products that qualify as a contact adhesive using the above definition, and that are labeled exclusively for ~~only one of the following applications~~ bonding of immersible products, shall not be required to meet the VOC limit for "Contact Adhesive" in Subsection III.A:
- ~~(1.) Single ply roof membrane installation/repair~~  
~~(2.) Bonding of immersible products~~  
~~(3.) Bonding of flexible vinyl to flexible vinyl~~
- K. COVE BASE INSTALLATION ADHESIVE is any adhesive intended by the manufacturer for the installation of cove base (or wall base), which is generally made of vinyl or rubber, on a wall or vertical surface at floor level.
- L. DRY WALL INSTALLATION is the installation of gypsum dry wall to studs or solid surfaces using an adhesive formulated for that purpose.

- M. EXEMPT COMPOUND is any of the following compounds: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, metallic carbonates, ammonium carbonate, methane, methylene chloride (dichloromethane), 1,1,1-trichloroethane (methyl chloroform), trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), 1,1,2-trichloro- 1,2,2-trifluoroethane (CFC-113), 1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114), chloropentafluoroethane (CFC-115), chloro-difluoromethane (HCFC-22), 1,1,1-trifluoro-2,2-dichloroethane (HCFC-123), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), 1,1-dichloro-1-fluoroethane (HCFC-141b), 1-chloro-1,1-difluoroethane (HCFC-142b), trifluoromethane (HFC-23), pentafluoroethane (HFC-125), 1,1,2,2-tetrafluoroethane (HFC-134), 1,1,1,2-tetrafluoroethane (HFC-134a), 1,1,1-trifluoroethane (HFC-143a), 1,1-difluoroethane (HFC-152a), cyclic, branched, or linear completely methylated siloxanes, acetone, ethane, parachlorobenzotrifluoride (1-chloro-4-trifluoro-methylbenzene), and the following classes of perfluorocarbons: (A) cyclic, branched, or linear, completely fluorinated alkanes; (B) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; © cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and (D) sulfur- containing perfluorocarbons with no unsaturations and with the sulfur bonds to carbon and fluorine.
- N. FLEXIBLE VINYL is nonrigid polyvinyl chloride plastic with at least five percent, by weight, of plasticizer content. A plasticizer is a material, such as a high boiling point organic solvent, that is incorporated into an adhesive to increase its flexibility, workability, or distensibility, and may be determined using ASTM Method E260-91 or from product formulation data.
- O. FIBERGLASS is fine filaments of glass.
- P. FOAM is a rigid or spongy cellular mass with gas bubbles dispersed throughout.
- Q. GRAMS OF VOC PER LITER OF ADHESIVE, LESS WATER AND LESS EXEMPT COMPOUNDS is the weight of VOC per combined volume of VOC and adhesive solids, and can be calculated by the following equation:

$$\text{Grams of VOC per Liter of Adhesive, Less Water, Less Exempt Compounds} = [W_s - W_w - W_e] \div [V_m - V_w - V_e]$$



Where:  $W_s$  = weight of volatile compounds, in grams  
 $W_w$  = weight of water, in grams  
 $W_e$  = weight of exempt compounds, in grams  
 $V_m$  = volume of material, in liters  
 $V_w$  = volume of water, in liters  
 $V_e$  = volume of exempt compounds, in liters

- R. GRAMS OF VOC PER LITER OF MATERIAL is the weight of VOC per volume of material and can be calculated by the following equation:

$$\text{Grams of VOC per Liter of Material} = [W_s - W_w - W_e] \div V_m$$

Where:  $W_s$  = weight of volatile compounds, in grams  
 $W_w$  = weight of water, in grams  
 $W_e$  = weight of exempt compounds, in grams  
 $V_m$  = volume of material, in liters

- ~~S. HOUSEHOLD ADHESIVE is any adhesive subject to Title 17, California Code of Regulations, sections 94507-94517 (Consumer Products). Household adhesives do not include units of product, less packaging, which weigh more than one pound or consist of more than 16 fluid ounces.~~

- ~~TS.~~ INDOOR FLOOR COVERING INSTALLATION ADHESIVE is any adhesive intended by the manufacturer for the installation of wood flooring, carpet, resilient tile, vinyl tile, vinyl backed carpet, resilient sheet and roll, or artificial grass. Ceramic tile installation is excluded from this category.

- ~~UT.~~ LAMINATE is a product made by bonding together two or more layers of material.

- ~~VU.~~ LOW-SOLIDS ADHESIVE, SEALANT, OR PRIMER is any product that contains 120 grams or less of solids per liter of material.

- ~~WV.~~ MARINE DECK SEALANT/SEALANT PRIMER is any sealant or sealant primer intended by the manufacturer to be applied to wooden marine decks.

- ~~XW.~~ METAL TO URETHANE/RUBBER MOLDING OR CASTING ADHESIVE is any adhesive intended by the manufacturer to bond metal to high density or elastomeric urethane or molded rubber materials, in heater molding or casting processes, to fabricate products such as rollers for computer printers or other paper handling equipment.

- X. MODIFIED BITUMEN MEMBRANE PRIMER consist of bituminous materials, and a high flash solvent with a flashpoint greater than 170 °F intended by the manufacturer to prepare a membrane surface by (1) improving the adhesion of subsequent adhesives and (2) absorbing dust and other contaminants.
- Y. MODIFIED BITUMINOUS MATERIALS are black or brown in appearance including, but not limited to, asphalt, tar, pitch, and asphaltile that are soluble in carbon disulfide, consist mainly of hydrocarbons, and obtained from natural deposit of asphalt or residues from the distillation of crude oil petroleum or coal.
- ~~YZ.~~ MULTIPURPOSE CONSTRUCTION ADHESIVE is any adhesive intended by the manufacturer for the installation or repair of various construction materials, including but not limited to drywall, subfloor, panel, fiberglass reinforced plastic (FRP), ceiling tile, and acoustical tile.
- ZAA. NONMEMBRANE ROOF INSTALLATION/REPAIR ADHESIVE is any adhesive intended by the manufacturer for the installation or repair of nonmembrane roofs and that is not intended for the installation of prefabricated single-ply flexible roofing membrane. This category includes plastic or asphalt roof cement, asphalt roof coatings, and cold application cement.
- ~~AABB.~~ OUTDOOR FLOOR COVERING INSTALLATION ADHESIVE is any adhesive intended by the manufacturer for the installation of floor covering that is not in an enclosure and is exposed to ambient weather conditions during normal use.
- ~~BBCC.~~ PANEL INSTALLATION is the installation of plywood, pre-decorated hardboard (or tileboard), fiberglass reinforced plastic, and similar pre-decorated or non-decorated panels to studs or solid surfaces using an adhesive formulated for that purpose.
- ~~CCDD.~~ PERCENT VOC BY WEIGHT is the ratio of the weight of the VOC to the weight of the material, expressed as a percentage of VOC by weight. The percent VOC by weight can be calculated as follows:

$$\%VOCweight = [W_v \div W] \times 100$$

Where:  $W_v$  = Weight of VOCs in grams  
 $W$  = Weight of material in grams

- ~~DEE~~. PLASTIC CEMENT WELDING ADHESIVE is any adhesive made of resins and solvents that is formulated to dissolve the surfaces of plastic to form a bond between mating surfaces.
- ~~EEF~~. PLASTIC CEMENT WELDING ADHESIVE PRIMER is any primer intended by the manufacturer to prepare plastic substrates prior to bonding or welding.
- ~~FF~~. ~~PLASTIC FOAM is a foam constructed of plastics.~~
- GG. PLASTICS are various synthetic materials chemically formed by the polymerization of organic (carbon-based) substances.
- HH. POLYVINYL CHLORIDE (PVC) WELDING ADHESIVE is any adhesive intended by the manufacturer for the welding of PVC plastic pipe. PVC plastic is a polymer of the chlorinated vinyl monomer that contains 57 percent chlorine and which is normally identified with a PVC marking.
- II. POROUS MATERIAL is a substance that has tiny openings, often microscopic, in which fluids may be absorbed or discharged. Such materials include but are not limited to wood, paper, and corrugated paperboard. ~~For the purpose of this determination (rule), porous material does not include plastic foam.~~
- JJ. PROPELLANT is a fluid under pressure that expels the contents of a container when a valve is opened.
- KK. ROADWAY SEALANT is any sealant intended by the manufacturer to be applied to public streets, highways, and other surfaces, including but not limited to curbs, berms, driveways, and parking lots.
- LL. RUBBER includes any natural or manmade rubber substrate, including but not limited to: styrene-butadiene rubber (SBR), polychloroprene (neoprene), butyl rubber, nitrile rubber, chlorosulfonated polyethylene (CSM), and ethylene propylene diene terpolymer (EPDM).
- MM. SEALANT PRIMER is any product intended by the manufacturer to be applied to a substrate, prior to the application of a sealant, to enhance the bonding surface.
- NN. SEALANT is any material with adhesive properties that is formulated primarily to fill, seal, waterproof, or weatherproof gaps or joints between two surfaces. Sealants include sealant primers and caulks.

- OO. SINGLE-PLY ROOF MEMBRANE is single sheets of rubber, normally EPDM (ethylene-propylene diene monomer), that are applied in a single layer to a building roof (normally a flat roof).
- PP. SINGLE-PLY ROOF MEMBRANE INSTALLATION/REPAIR ADHESIVE is any adhesive intended by the manufacturer for the installation or repair of single-ply roof membrane. Installation includes, as a minimum, attaching the edge of the membrane to the edge of the roof and applying flashings to vents, pipes, and ducts that protrude through the membrane. Repair includes gluing the edges of tears together, attaching a patch over a hole, and reapplying flashings to vents, pipes, or ducts installed through the membrane.
- QQ. SINGLE-PLY ROOF MEMBRANE ADHESIVE PRIMER is any primer intended by the manufacturer to clean and promote adhesion of the single-ply roof membrane seams or splices prior to bonding.
- RR. SINGLE-PLY ROOF MEMBRANE SEALANT is any sealant intended by the manufacturer to be applied to single-ply roof membrane.
- SS. STRUCTURAL GLAZING ADHESIVE is any adhesive intended by the manufacturer to adhere glass, ceramic, metal, stone, or composite panels to exterior building frames.
- TT. SUBFLOOR INSTALLATION is the installation of subflooring material over floor joists, including the construction of any load bearing joists. Subflooring is covered by a finish surface material.
- UU. SURFACE PREPARATION SOLVENT is a solvent used in the cleaning of a substrate to remove dirt, oil, and other contaminants. This surface cleaning is typically done prior to the application of primers, adhesives, or sealants.
- VV. THIN METAL LAMINATING ADHESIVE is any adhesive intended by the manufacturer to bond multiple layers of metal to metal or metal to plastic in the production of electronic or magnetic components in which the thickness of the bond line(s) is less than ~~0.025~~0.25 mils.
- WW. TIRE REPAIR is the expanding of a hole, tear, fissure, or blemish in a tire casing by grinding or gouging, applying adhesive, and filling the hole or crevice with rubber.
- XX. TIRE RETREAD ADHESIVE is any adhesive intended by the manufacturer to be applied to the back of precure tread rubber and to the casing and cushion

rubber. It may also be used to seal buffed tire casings to prevent oxidation while the tire is being prepared for a new tread.

YY. TRAFFIC MARKING TAPE is preformed reflective film intended by the manufacturer to be applied to public streets, highways, and other surfaces, including but not limited to curbs, berms, driveways, and parking lots.

ZZ. TRAFFIC MARKING TAPE ADHESIVE PRIMER is any primer intended by the manufacturer to be applied to surfaces prior to installation of traffic marking tape.

AAA. VCT means vinyl composition tile.

~~A~~BBB. VOLATILE ORGANIC COMPOUND (VOC) is any compound containing at least one atom of carbon, excluding exempt compounds (see definition M).

### III. REQUIREMENTS

- A. Standards: A person shall not apply adhesives, sealants, or adhesive or sealant primers that have a VOC content (gram/liter [g/l], less water and exempt compounds) in excess of the following limits (for low-solids adhesives, sealants, or primers, the VOC content is based on a g/l of material basis):

	<u>VOC LIMITS</u> (g/l)	<u>BARCT</u> <u>VOC LIMITS</u> (Effective (g/l)
1/1/9800)		
(1) Adhesives:		
ABS welding	400	
Ceramic tile installation	<del>150</del> 130	130
Computer diskette jacket manufacturing	850	
Contact	<del>200</del>	
- Porous	<u>250</u>	
- Nonporous	<u>540</u>	<u>250*</u>
Cove base installation	<del>200</del> 150	150
CPVC welding	490	
Indoor floor covering installation		150
Metal to urethane/rubber molding or casting	850	250*
Multipurpose construction		200
Nonmembrane roof installation/repair		300
Other plastic cement welding	510	
Outdoor floor covering installation	250	
PVC welding	510	
Single-ply roof membrane installation/repair	<del>650</del> 250	250
Structural glazing	100	
Thin metal laminating	780	<u>250*</u>
Tire retread	100	
(2) Sealants:		
Architectural	250	
Marine deck	760	
Nonmembrane roof installation/repair	300	
Roadway	250	
Single-ply roof membrane		450
Other	420	

~~\* These are technology forcing standards. Technology forcing standards are standards which may not be met at the present time and have future effective dates. It is anticipated~~

~~that adhesives technology will advance sufficiently to meet these standards by the time these standards go into effect.~~

	<u>VOC LIMITS</u> (g/l)	<u>BARCT</u> <u>VOC LIMITS</u> (Effective (g/l)
1/1/9800)		
(3) Adhesive Primers:		
Automotive glass	700	
Plastic cement welding	650	
Single-ply roof membrane		<del>650</del> 250
250*		
<u>Modified Bitumen Membrane Primer</u>	<u>500</u>	
Traffic marking tape	<del>550</del> 150	150
Other	250	
(4) Sealant Primers:		
Architectural		
- Non porous	250	
- Porous	775	
Marine deck	760	
Other	750	
(5) Adhesives Application Onto Substrate:		
Flexible vinyl to flexible vinyl	<del>660</del> 250	250
Flexible vinyl to any other substrate	250	
Fiberglass	200	
Metal	30	
<del>Plastic foam</del>	<del>120</del>	
Porous material ( <del>except plastic foam</del> )	<del>150</del> 120	120
Rubber	<del>650</del> 250	250
Other substrates	250	

\* These are technology forcing standards. Technology forcing standards are standards which may not be met at the present time and have future effective dates. It is anticipated that adhesives technology will advance sufficiently to meet these standards by the time these standards go into effect.

(6) If an adhesive is used to bond dissimilar substrates together, ~~except for bonding flexible vinyl to any other substrate~~, the applicable substrate category with the highest VOC content shall be the limit for that operation.

- (7) If an operator uses an adhesive or sealant subject to section III.A.(1), III.A.(2), III.A.(3), or section III.A.(4), the requirement in that section is applicable rather than that in section III.A.(5).
- B. Aerosol Adhesives: A person shall not use any aerosol adhesive unless the VOC content, including the propellant, does not exceed 75 percent by weight. Effective 1/1/2002, the VOC content of aerosol adhesives shall not exceed 25 percent by weight.<sup>2</sup>
- C. Cleanup Solvent:
- (1) No person shall use materials containing VOC for the removal of adhesives, sealants, or adhesive or sealant primers from surfaces, other than spray application equipment, unless the composite vapor pressure of the solvent used is less than 45 mm of Hg at 20<sup>0</sup> C.
  - (2) Spray application equipment: Either one of the following shall be used for cleaning, flushing or soaking of filters, flushing lines, pipes, pumps, and other parts of the application equipment:
    - (a) An enclosed cleaning system, or an equivalent cleaning system as determined by the test method referenced in section VI.H,<sup>3</sup> or
    - (b) A solvent with a VOC content of 70 grams of VOC per liter of material, or less. Parts containing dried adhesive may be soaked in an organic solvent as long as the composite vapor pressure, excluding water, of the solvent is 9.5 mm of Hg at 20<sup>0</sup> C or less and is kept in a closed container, which shall be closed except when depositing or removing parts or materials from the container.
- D. Surface Preparation Solvent: No person shall use materials containing VOCs for surface preparation, except for single-ply roofing, unless the VOC content of the solvent is less than 70 g/l, except for single-ply roofing. The composite vapor pressure of the surface preparation solvent used for single-ply roofing shall not exceed 45 mm of Hg at 20<sup>0</sup> C effective (date of adoption).
- E. A person may comply with the provisions of subsections III.A, B, C, and D by using approved add-on air pollution control equipment, provided that:

---

<sup>2</sup> The ARB will conduct a technology assessment by 7/1/2000 to determine the feasibility of the 25 percent VOC level to be implemented on 1/1/2002.

<sup>3</sup> Adoption of section III.C.(2).(a) is at the discretion of the district.



- (1) The VOC emissions from such operations and/or materials are reduced by at least 85 percent overall capture and destruction efficiency, by weight,
  - (2) Combustion temperature is continuously monitored when operating a thermal incinerator,
  - (3) Inlet and exhaust gas temperatures are continuously monitored when operating a catalytic incinerator,
  - (4) Control device efficiency is continuously monitored when operating a carbon adsorber or control device other than a thermal or catalytic incinerator, and
  - (5) Written approval for such equipment, in the form of an Authority to Construct and a Permit to Operate, is received from the Executive Officer.
- F. Storage of VOC Containing Materials: All VOC containing materials, including VOC-laden cloth or paper used in stripping cured adhesives, shall be stored or disposed in non-absorbent containers, which shall be closed except when depositing or removing materials from the container.
- G. Prohibition of Sales:<sup>4</sup>
- (1) Except as provided in subsections III.G.(3) and III.G.(4) after the specified effective dates, no person shall supply, sell, or offer for sale any adhesive, sealant, or adhesive or sealant primer which, at the time of sale, exceeds the corresponding VOC limit listed in subsections III.A.(1), (2), (3), or (4) and is defined under a product category in those subsections. This provision only applies to products that are supplied to or sold to persons within the District.
  - (2) Except as provided in subsections III.G.(3) and III.G.(4), no person shall supply, sell, or offer for sale, any aerosol adhesive which, at the time of sale, exceeds the VOC limits listed in subsection III.B. after the specified effective dates.
  - (3) The sales prohibition in subsections III.G.(1) and III.G.(2) shall not apply to any supplier or seller of any adhesive, sealant, or adhesive or sealant primer as follows:
    - (a) Any adhesive shipped outside of the District for use outside of the District.

---

<sup>4</sup> Adoption of section III.G is at the discretion of the District

- (b) The sale of adhesives to a user who has installed a District permitted VOC add-on control device.
- (4) The sales prohibition in subsections III.G.(1) and III.G.(2) shall not apply to any manufacturer of any adhesive, sealant, or adhesive or sealant primer if the manufacturer has provided the maximum VOC content per subsection III.H and if:
  - (a) The product was not sold directly to a user or a sales outlet located in the District, or
  - (b) The product was sold to an independent distributor that is not a subsidiary of, or under the direct control of, the manufacturer.
- (5) The sales prohibition in subsections III.G.(1) and III.G.(2) shall not apply to the sale of any ~~contact, multipurpose construction, adhesive, primer, sealant, or aerosol adhesive, except for plastic cements, welding adhesives or primers,~~ if:
  - (a) The product is sold in any container(s) having a capacity of 16 fluid ounces or less (net volume) or one pound or less (net weight); and
  - (b) The total net weight or volume of two or more containers packaged together must be equal to or less than one pound or 16 fluid ounces, respectively, to qualify for this exemption.
- H. Compliance Statement Requirement: The manufacturer of any adhesive, sealant, or adhesive or sealant primer subject to this determination shall display the maximum VOC content as supplied from the appropriate test method, on labels or containers. This designation shall display recommendations regarding thinning, reducing, or mixing with any other VOC containing material. This information shall include the maximum VOC content on an as-applied basis when used in accordance with the manufacturer's recommendations.
- I. Prohibition of Specification: No person shall solicit, require for use, or specify the application of any adhesive, primer, or sealant if such use or application results in a violation of the provisions of this determination (rule). This prohibition shall apply to all written or oral contracts.

#### IV. EXEMPTIONS

- A. The provisions of this determination (rule) shall not apply to the following:

- (1) Adhesives used in tire repair operations, provided a label on the adhesive used states "For Tire Repair Only."
- (2) Adhesives used in the assembly and manufacturing of undersea-based weapon systems.
- (3) Adhesives, sealants, adhesive primers or sealant primers being tested or evaluated in any research and development, quality assurance, or analytical laboratory, provided that the following records are maintained and made available to District personnel for a period of at least two years:
  - (a) A list of all such materials used, which at a minimum includes the manufacturer's identification, the product category of the material or type of application, and the VOC content of each material.
  - (b) Such records shall be retained in accordance with the provisions of section V of this determination (rule).
- (4) Solvent welding operations used in the manufacturing of medical devices.
- (5) Plaque laminating operations where adhesives are used to bond a clear, polyester acetate laminate to wood with lamination equipment installed prior to July 1, 1992. Any person seeking to claim this exemption shall notify the Executive Officer in writing that a complying adhesive is not available.
- (6) Adhesives and sealants that are regulated by other District rules.
- (7) Adhesives and sealants that contain less than 20 grams of VOC per liter of adhesive or sealant, less water and less exempt compounds, as applied.
- (8) Adhesives that are subject to Title 17, California Code of Regulations, sections 94507-94517 (Consumer Products).<sup>5</sup>
- (9) [Reserved for specific exemptions determined by the APCO to be technologically infeasible or not cost-effective to retrofit].
- (10) Adhesives containing cyanoacrylate.

- B. The provisions of this determination (rule), except Section III.G (Prohibition of Sales), shall not apply if the total VOC emissions from all adhesives, sealants, adhesive primers and sealant primers applied at the stationary source are less than

---

<sup>5</sup> Adoption of section IV.A.(8) is at the discretion of the District. If the District does not adopt the Prohibition of Sales (III.G), this exemption should be adopted.

200 lb per calendar year (or an equivalent volume). Any person claiming this exemption shall record and maintain monthly operational records that can substantiate this claim.<sup>6</sup>

- C. The provisions of section III.A and III.B shall not apply to the use of any adhesive, sealant, or adhesive or sealant primer provided the total volume of noncomplying adhesives, sealants, and primers applied facility-wide does not exceed 55 gallons per calendar year. Any person seeking to claim this exemption shall notify the Executive Officer in writing, for each formulation, that a complying adhesive, sealant, or primer is not available. Any person claiming this exemption shall record and maintain monthly operational records that can substantiate this claim.<sup>7</sup>

## V. ADMINISTRATIVE REQUIREMENTS

- A. Recordkeeping - Any person subject to this determination (rule) shall:
- (1) Maintain a current list of each adhesive, sealant, adhesive or sealant primer, and solvent in use and in storage. The file shall provide all of the data necessary to evaluate compliance and shall include, but not limited to, the following information, as applicable:
    - (a) A data sheet or material list giving the material name, manufacturer identification, and material application.
    - (b) Any catalysts, reducers, or other components used and the mix ratio.
    - (c) The applicable VOC content limit or vapor pressure limit from section III and the actual VOC content, as applied, or vapor pressure of the adhesive, sealant, primer, or solvent.
  - (2) Maintain records of the monthly volume of each adhesive, sealant, primer, or solvent used.

---

<sup>6</sup> Adoption of section IV.B is at the discretion of the District.

<sup>7</sup> Adoption of section IV.C is at the discretion of the District. If the District adopts the Prohibition of Sales (III.G), this exemption should only be granted for the use of adhesives subject to section III.A.(5).

- (3) When compliance is achieved through the use of add-on control equipment, maintain records on a daily basis of key operating parameters for the emission control equipment, including, but not limited to:
  - (a) Hours of operation
  - (b) Routine and nonroutine maintenance
  - (c) The applicable information specified in section III.E.
  - (d) The daily volume of each noncompliant adhesive, sealant, primer, or solvent used.
- (4) All records shall be maintained for at least two (2) years and shall be available for inspection.

## VI. TEST METHODS

- A. The VOC and solids content of all nonaerosol adhesives, adhesive primers, and cleaning solvents, except as specified in section VI.D., shall be determined using U.S. EPA Reference Method 24 (40 CFR Part 60, Appendix A) or South Coast AQMD Method 304.
- B. Exempt organic compounds shall be determined using ASTM D4457-85. For exempt compounds where no reference test method is available, a facility requesting the exemption shall provide appropriate test methods approved by the Executive Officer and approvable by the U.S. EPA.
- C. The VOC content of aerosol adhesives shall be determined using ARB Method 310. The VOC content of aerosol adhesive primers shall be determined using ARB Method 310 or South Coast AQMD Method 305 for Aerosol Coatings.
- D. The VOC content of any plastic welding cement adhesive or primer shall be determined using South Coast AQMD Method 316A.
- ~~E. The measurement of the VOC content of adhesives containing cyanoacrylate shall be determined using (proposed) South Coast AQMD Method \_\_\_\_.~~
- EF. The composite vapor pressure of organic compounds in cleaning materials shall be determined by quantifying the amount of each compound in the blend using gas chromatographic analysis (ASTM E 260-91) for organics and ASTM D3792-79 for

water content, if applicable, or by using product formulation data, and by summing the partial pressures of each compound at 20<sup>0</sup> C. For the purpose of this calculation, Raoult's Law applies to the blend. The vapor pressure of each single component compound may be determined from ASTM D2879-86 or may be obtained from a published source approved by the Executive Officer, such as the sources referenced in 40 CFR 52.741.

- EG. The measurement of capture efficiency of an emission control system shall be conducted and reported in accordance with U.S. EPA protocols referenced in 55 CFR 26865, June 29, 1990, the recently approved U.S. EPA Technical Document "Guidelines for Determining Capture Efficiency," issued January 9, 1995, or a district capture efficiency determination method approved by the U.S. EPA.
- GH. The measurement of control efficiency shall be in accordance with U.S. EPA Methods 25, 25A, 25B, or ARB Method 100.
- HI. The active and passive solvent losses from spray gun cleaning systems shall be determined using South Coast AQMD's "General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems," dated October 3, 1989. The test solvent for this determination shall be any lacquer thinner with a minimum vapor pressure of 105 mm of Hg at 20<sup>0</sup> C, and the minimum test temperature shall be 15<sup>0</sup> C.